



# iNtRON

## BIOTECHNOLOGY

### SAFETY DATA SHEET

#### RealMOD™ Green W<sup>2</sup> 2x qPCR mix

Date of issue: 2018-05-30

Revision date: Not applicable

Version: R0001.0001

#### 1. IDENTIFICATION

##### A. Product name

- RealMOD™ Green W<sup>2</sup> 2x qPCR mix [IDR-R0087]

##### B. Recommended use and restriction on use

- General use : Not available  
 - Restriction on use : Not available

##### C. Manufacturer / Supplier / Distributor information

###### o Manufacturer information

- Company name :  
 - Address :  
 - Dept. :  
 - Telephone number :  
 - Emergency telephone number :  
 - Fax number :  
 - E-mail address :

###### o Supplier/Distributor information

- Company name :  
 - Address :  
 - Dept. :  
 - Telephone number :  
 - Emergency telephone number :  
 - Fax number :  
 - E-mail address :

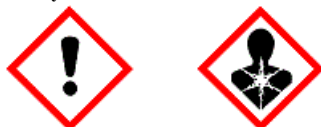
#### 2. HAZARD IDENTIFICATION

##### A. GHS Classification

- Serious eye damage/irritation : Category2A  
 - Specific target organ toxicity(Repeated exposure) : Category2

##### B. GHS label elements

###### o Hazard symbols



###### o Signal words

- Warning

###### o Hazard statements

- H319 Causes serious eye irritation

- H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

o **Precautionary statements**

**1) Prevention**

- P260 Do not breathe dust/fume.
- P264 Wash hands thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

**2) Response**

- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P314 Get medical advice/attention if you feel unwell.
- P337+P313 If eye irritation persists: Get medical advice/attention.

**3) Storage**

- Not applicable

**4) Disposal**

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

**C. Other hazards which do not result in classification : (NFPA Classification)**

o **NFPA grade (0 ~ 4 level)**

- Health : 2, Flammability : 0, Reactivity : 0

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Glycerol	Glyceritol ; Glycylalcohol ; Glyrol ; Glycerin ; Glycerine ; 1,2,3-Propanetriol ; 1,2,3-Trihydroxypropane ; Glycol alcohol ; Propane-1,2,3-triol ; Glysamin ; Propanetriol	56-81-5	<0.7%
Ethylenediaminetetraacetic acid	Acetic acid, 2,2',2'',2'''-(1,2-ethanediyldinitrilo)tetrakis- ; 3,6-Diazaoctanedioic acid, 3,6-Bis(carboxymethyl)- ; 2-[2-(Bis(carboxymethyl)amino)ethyl-(carboxymethyl)amino]acetic acid ; Ethylenediamine-N,N,N',N'-tetraacetic acid ; N,N'-1,2-Ethanediybis[N-(carboxymethyl)glycine] ; (Ethylenedinitrilo)tetraacetic acid ; Ethylenebisiminodiacetic acid ;	60-00-4	<0.07%
$\alpha$ -D-Glucopyranosyl $\alpha$ -D-glucopyranoside	-	99-20-7	<0.05%
Tris(hydroxymethyl)aminomethane hydrochloride	-	1185-53-1	<0.7%
Potassium chloride	Dipotassium dichloride ; Potassium monochloride ;	7447-40-7	<0.8%
Magnesium chloride	Magnesium dichloride ; Magnesium(II) chloride ; Magnogene ; Magnesium chloride solution	7786-30-3	<1
$\alpha$ -(4-Nonylphenyl)- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl), branched	-	127087-87-0	<0.005%

**4. FIRST AID MEASURES**

**A. Eye contact**

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contact lenses if worn.

**B. Skin contact**

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Laundering enough contaminated clothing before reuse.
- Get medical attention immediately.

### C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.

### D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

### E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

### F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

## 5. FIREFIGHTING MEASURES

### A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

### B. Specific hazards arising from the chemical

- Not available

### C. Special protective actions for firefighters

- Using a unattended and water devices in case of large fire and leave alone to burn if you do not imperative.
- Do not access if the tank on fire.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Fine powder may cause ignition.

## 6. ACCIDENTAL RELEASE MEASURES

### A. Personal precautions, protective equipment and emergency procedures

- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Remove all sources of ignition.
- Avoid dust formation.
- Moist with water to prevent dust scattering.
- Avoid skin contact and inhalation.

### B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

### C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.

- Dust spills : Cover dust spills with plastic sheet or waterproof cloth to minimize spreading and avoid contact with water.
- Small liquid state spills: Appropriate container for disposal of spilled material collected.
- For disposal of spilled material in appropriate containers collected and clear surface.

## 7. HANDLING AND STORAGE

### A. Precautions for safe handling

- Avoid contact with incompatible materials.
- Comply with all applicable laws and regulations for handling
- Refer to Engineering controls and personal protective equipment.
- Operators should wear antistatic footwear and clothing.
- Minimize occurrence of dust and accumulation.

### B. Conditions for safe storage, including any incompatibilities

- Do not apply direct heat.
- Avoid direct sunlight.
- Keep in the original container.
- Please pay attention to incompatibilities materials and conditions to avoid.
- No open fire.
- Collected them in sealed containers.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### A. Exposure limits

- o **ACGIH TLV**
  - [Glycerol] : TWA, 10 mg/m<sup>3</sup>
- o **OSHA PEL**
  - [Glycerol]: 15 mg/m<sup>3</sup> (Total dust), 5 mg/m<sup>3</sup> (Respirable fraction)

### B. Engineering controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. The use of local exhaust ventilation is recommended to control emissions near the source.

### C. Individual protection measures, such as personal protective equipment

- o **Respiratory protection**
  - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
  - Respiratory protection is ranked in order from minimum to maximum.
  - Consider warning properties before use.
  - Dust, mist, fume-purifying respiratory protection
  - Any air-purifying respirator with a corpuscle filter of high efficiency
  - Any respiratory protection with a electromotion fan(for dust, mist, fume-purifying)
  - Self-contained breathing apparatus with a corpuscle filter of high efficiency
  - For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- o **Eye protection**
  - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
  - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- o **Hand protection**
  - Wear appropriate glove.
- o **Skin protection**
  - Wear appropriate clothing.
- o **Others**
  - Not available

## 9. PHYSICAL AND CHEMICAL PROPERTIES

## [Ethylenediaminetetraacetic acid]

A. Appearance	
- Appearance	Not available
- Color	Not available
B. Odor	Odorless
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	245 °C
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	2E-12 mmHg (25 °C (estimate))
L. Solubility	0.05 g /100ml
M. Vapour density	Not available
N. Specific gravity(Relative density)	0.086 (Water=1)
O. Partition coefficient of n-octanol/water	-3.86 (estimate)
P. Autoignition temperature	Not available
Q. Decomposition temperature	150 °C
R. Viscosity	Not available
S. Molecular weight	292.25

## [Tris(hydroxymethyl)aminomethane hydrochloride]

A. Appearance	
- Appearance	Solid (powder, crystalline)
- Color	From achromatic to white
B. Odor	Odorless
C. Odor threshold	Not available
D. pH	3.5-5.5 (0.5M liquid)
E. Melting point/Freezing point	149 °C (melting point)
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	-/- % (Not available)
K. Vapour pressure	Not available
L. Solubility	Availability
M. Vapour density	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	150-152 °C
R. Viscosity	Not available
S. Molecular weight	157.6

[ $\alpha$ -(4-Nonylphenyl)- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl), branched]

A. Appearance	
- Appearance	Liquid
- Color	Not available
B. Odor	Not available
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	Not available
H. Evaporation rate	Not available

I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	-/-
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	Not available
N. Specific gravity(Relative density)	Not available
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	Not available

## [Glycerol]

A. Appearance	
- Appearance	Liquid (Diamond plate)
- Color	Colorless
B. Odor	Light smell
C. Odor threshold	Not available
D. pH	(neutral)
E. Melting point/Freezing point	18.1 °C
F. Initial Boiling Point/Boiling Ranges	290 °C
G. Flash point	177 °C (ca. 101.3 kPa)
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Bottom line : 3 , Top line : 19 (Flash point :199 °C)
J. Upper/Lower Flammability or explosive limits	19 / 2.7%
K. Vapour pressure	0.000168 mmHg (at 25 deg C)
L. Solubility	1000000 mg/l (25 °C)
M. Vapour density	3.1 (gas=1)
N. Specific gravity(Relative density)	1.2613 g/cu cm (at 20 deg C)
O. Partition coefficient of n-octanol/water	-1.76
P. Autoignition temperature	405 °C (ca. 101.3 kPa)
Q. Decomposition temperature	290 °C
R. Viscosity	954 (at 25C)
S. Molecular weight	92.09

## [Potassium chloride]

A. Appearance	
- Appearance	Solid (powder, crystalline)
- Color	Colorless
B. Odor	Odorless
C. Odor threshold	Not available
D. pH	7
E. Melting point/Freezing point	770-773 °C
F. Initial Boiling Point/Boiling Ranges	1407 °C
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	-/-
K. Vapour pressure	(5.73 hPa at 906 °C)
L. Solubility	342000 mg/l (at 20 °C)
M. Vapour density	Not available
N. Specific gravity(Relative density)	1.98
O. Partition coefficient of n-octanol/water	-0.46
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available

S. Molecular weight	74.55
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## [Magnesium chloride]

A. Appearance	
- Appearance	Solid
- Color	Light white to opaque gray
B. Odor	Odorless
C. Odor threshold	Not available
D. pH	8.4 (at 2430g/L and 20 °C)
E. Melting point/Freezing point	712 °C
F. Initial Boiling Point/Boiling Ranges	1412 °C
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	-/-
K. Vapour pressure	25mmHg (at 1000 °C)
L. Solubility	54.6 g /100g (at 20 °C)
M. Vapour density	Not available
N. Specific gravity(Relative density)	2.32
O. Partition coefficient of n-octanol/water	0.05
P. Autoignition temperature	Not available
Q. Decomposition temperature	622 °C
R. Viscosity	Not available
S. Molecular weight	95.21

[ $\alpha$ -D-Glucopyranosyl  $\alpha$ -D-glucopyranoside]

A. Appearance	
- Appearance	Solid (powder, crystalline)
- Color	white to light gray
B. Odor	Not available
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	203 °C
F. Initial Boiling Point/Boiling Ranges	591.67 °C (Estimate)
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	0.00000000000000000003 (at 20 °C)
L. Solubility	1000000 (at 25 °C, Estimate)
M. Vapour density	Not available
N. Specific gravity(Relative density)	1.53g/cm <sup>3</sup> (at 20 °C)
O. Partition coefficient of n-octanol/water	-5.48 (Estimate)
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	342.3

## 10. STABILITY AND REACTIVITY

### A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

### B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

### C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

### D. Incompatible materials

- Not available

### E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

## 11. TOXICOLOGICAL INFORMATION

### A. Information on the likely routes of exposure

- **(Respiratory tracts)**
  - Not available
- **(Oral)**
  - Not available
- **(Eye·Skin)**
  - Causes serious eye irritation

### B. Delayed and immediate effects and also chronic effects from short and long term exposure

- **Acute toxicity**
  - \* **Oral**
    - Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
    - [Glycerol] : LD50 = 12600 mg/kg Rat (ChemIDplus)
    - [Ethylenediaminetetraacetic acid] : LD50 2580 mg/kg Rat (NITE)
    - [Potassium chloride] : LD50 2600 mg/kg Rat (HSDB)
    - [Magnesium chloride] : LD50 = 2800 mg/kg Rat
    - [ $\alpha$ -(4-Nonylphenyl)- $\omega$ -hydroxypoly(oxy-1,2-ethanediy1), branched] : LD50 1300 mg/kg Rat ((Certfield Labs, Division of NCH Corporation))
  - \* **Dermal**
    - Product (ATEmix) : Not available
    - [Glycerol] : LD50 > 10000 mg/kg Rat (ChemIDplus)
  - \* **Inhalation**
    - Product (ATEmix) : Not available
    - [Glycerol] : LC50 >2.75 mg/l 4 hr Rat (ECHA)
- **Skin corrosion/irritation**
  - Not available
- **Serious eye damage/irritation**
  - Causes serious eye irritation
- **Respiratory sensitization**
  - Not available
- **Skin sensitization**
  - Not available
- **Carcinogenicity**
  - \* **IARC**
    - Not available
  - \* **OSHA**
    - Not available



- \* **ACGIH**
  - Not available
- \* **NTP**
  - Not available
- \* **EU CLP**
  - Not available
- **Germ cell mutagenicity**
  - Not available
- **Reproductive toxicity**
  - Not available
- **STOT-single exposure**
  - Not available
- **STOT-repeated exposure**
  - May cause damage to organs through prolonged or repeated exposure
- **Aspiration hazard**
  - Not available

## 12. ECOLOGICAL INFORMATION

### A. Ecotoxicity

- **Fish**
  - [Glycerol] : LC50 >11 mg/ℓ 96 hr *Cyprinodon variegatus* (ECHA)
  - [Ethylenediaminetetraacetic acid] : LC50 41 mg/ℓ 96 hr
  - [Tris(hydroxymethyl)aminomethane hydrochloride] : LC50 259000000 mg/ℓ 96 hr (Estimate)
  - [Potassium chloride] : LC50 880 mg/ℓ 96 hr *Pimephales promelas* (OECD SIDS)
  - [Magnesium chloride] : LC50 2120 mg/ℓ 96 hr *Pimephales promelas* (ECOTOX)
- **Crustaceans**
  - [Glycerol] : LC50 1955 mg/ℓ 48 hr *Daphnia magna* (ECHA)
  - [Ethylenediaminetetraacetic acid] : EC50 113 mg/ℓ 48 hr
  - [Tris(hydroxymethyl)aminomethane hydrochloride] : LC50 174000000 mg/ℓ 48 hr (Estimate)
  - [Potassium chloride] : EC50 177 mg/ℓ 48 hr *Daphnia magna* (OECD SIDS)
  - [Magnesium chloride] : EC50 140 mg/ℓ 48 hr *Daphnia magna* (ECOTOX)
- **Algae**
  - [Ethylenediaminetetraacetic acid] : ErC50 6 mg/ℓ 72 hr *Selenastrum* (NITE: MOE Eco-Toxicity Tests of Chemicals, 2002)
  - [Tris(hydroxymethyl)aminomethane hydrochloride] : EC50 737000000 mg/ℓ 96 hr (Estimate)
  - [Potassium chloride] : EC50 2500 mg/ℓ 72 hr (IUCLID)
  - [Magnesium chloride] : EC50 2200 mg/ℓ 72 hr *Scenedesmus subspicatus* (ECOTOX)

### B. Persistence and degradability

- **Persistence**
  - [Glycerol] : Log Kow -1.76 (HSDB)
  - [ $\alpha$ -D-Glucopyranosyl  $\alpha$ -D-glucopyranoside] : log Kow -5.48 (NLM;ChemIDPlus)
  - [Potassium chloride] : log Kow -0.46 (OECD SIDS)
  - [Magnesium chloride] : log Kow 0.05 (Estimate)
- **Degradability**
  - Not available

### C. Bioaccumulative potential

- **Bioaccumulative potential**
  - [Ethylenediaminetetraacetic acid] : BCF 123 (NITE)
  - [ $\alpha$ -D-Glucopyranosyl  $\alpha$ -D-glucopyranoside] : BCF 3.16 (Estimate)
  - [Potassium chloride] : BCF 0.47 (IUCLID)
  - [Magnesium chloride] : BCF 3.162 (Estimate)
- **Biodegradation**
  - [Glycerol] : Biodegradability = 65 (%) 14 day (OECD TG 301C, OECD SIDS, OECD TG 301D, IUCLIDE), 94 % 24hr (10C removal)(ECHA)
  - [Ethylenediaminetetraacetic acid] : BOD: 0% (NITE: Existing Chemical Safety Inspections Data)

### D. Mobility in soil

- [ $\alpha$ -D-Glucopyranosyl  $\alpha$ -D-glucopyranoside] : Koc 10 (Estimates)

#### E. Other adverse effects

- Not available

### 13. DISPOSAL CONSIDERATIONS

#### A. Disposal methods

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

#### B. Special precautions for disposal

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

### 14. TRANSPORT INFORMATION

#### A. UN No. (IMDG CODE/IATA DGR)

- 3077

#### B. Proper shipping name

- ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S.

#### C. Hazard Class

- 9

#### D. IMDG CODE/IATA DGR Packing group

- III

#### E. Marine pollutant

- Not applicable

#### F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-F (Water-soluble marine pollutants)

### 15. REGULATORY INFORMATION

#### A. National and/or international regulatory information

- o POPs Management Law
  - Not applicable
- o Information of EU Classification
  - \* Classification
    - [Ethylenediaminetetraacetic acid] : H319
- o U.S. Federal regulations
  - \* OSHA PROCESS SAFETY (29CFR1910.119)
    - Not applicable
  - \* CERCLA Section 103 (40CFR302.4)
    - [Ethylenediaminetetraacetic acid] : 2267.995 kg 5000 lb
  - \* EPCRA Section 302 (40CFR355.30)
    - Not applicable
  - \* EPCRA Section 304 (40CFR355.40)
    - Not applicable
  - \* EPCRA Section 313 (40CFR372.65)

- Not applicable
- **Rotterdam Convention listed ingredients**
  - Not applicable
- **Stockholm Convention listed ingredients**
  - Not applicable
- **Montreal Protocol listed ingredients**
  - Not applicable

## 16. OTHER INFORMATION

### A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

### B. Issue date

- 2018-05-30

### C. Revision number and Last date revised

- Not applicable

### D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).